

***REMARKS***

This amendment is in response to the Office Action of February 2, 2007. Reconsideration in view of the following remarks and above amendments is respectfully requested.

New claims 11-26 have been added which are based on the claims 1-10. Accordingly, claim 1-10 have been cancelled. Upon entry of this amendment, claims 11-26 are pending in the application. Accordingly, applicant respectfully requests favorable reconsideration and allowance.

**Objection to the Abstract**

The abstract of the disclosure is objected to because it contains the legal expressions "comprising" (third line) and "said" (fifth line). The abstract has been revised as suggested.

**Objection to the Specification**

The specification is objected to because the references to the claims are improper. The specification has been corrected by deleting the references to the claims.

**The 35 U.S.C. § 112 Rejections**

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, it is suggested that the phrase ", in particular, via a siphon." at the end of claim 3 be somewhat ambiguous. Since claim 3 has been cancelled, this

rejection is now moot, and it is respectfully submitted that new claims 11-26 all satisfy the statutory requirements.

**The 35 U.S.C. § 102/103 Rejections**

Claims 1, 2, 9, and 10 are rejected under 35 USC 102(b) as allegedly being anticipated by, or, in the alternative, under 35 USC 103(a) as allegedly being obvious over U.S. Patent No. 2,825,210 to *Carr*.

Claim 3 is rejected under 35 USC 103(a) as allegedly being unpatentable over *Carr* in view of U.S. Patent No. 3,800,505 to *Tarves, Jr.*

Claims 4 and 7 are rejected under 35 USC 103(a) as allegedly being unpatentable over *Carr* in view of U.S. Patent No. 5,039,318 to *Johansson*.

Claim 5 is rejected under 35 USC 103(a) as allegedly being unpatentable over the prior art as applied to claim 4 above, and further in view of U.S. Patent No. 5,141,529 to *Oakley et al.*

Claim 6 is rejected under 35 USC 103(a) as allegedly being unpatentable over the prior art as applied to claim 4 above, and further in view of U.S. Patent No. 3,745,751 to *Zey et al.*

Claim 8 is rejected under 35 USC 103(a) as allegedly being unpatentable over the prior art as applied to claim 7

above, and further in view of International Publication No. WO 01/52711 to *Zielonka*.

Although, the rejected claims 1-10 are cancelled herein, the above-identified rejections are traversed as they apply to new claims 11-26.

New claim 11 is directed to a heat exchanger for the exchange of heat between a first air stream and a second air stream, comprising a plurality of plates delimiting first and second exchange spaces disposed next to each other in a direction transverse with respect to the plates wherein with each of the first exchange spaces at least one plate is conductive and wherein said first air stream may be adapted to flow through said first exchange spaces and said second air stream is adapted to flow through said second exchange spaces. An ionization device is provided for ionizing particles entrained in said first air stream so that the particles deposit at said conductive plates of the first exchange spaces. A water distribution system is provided with nozzles for periodically discharging water into said first exchange spaces for cleaning the plates of the heat exchanger from deposited particles, bacteria, algae and other deposits. A water collection device is provided in a lower region of the heat exchanger for discharging collected water.

To facilitate the Examiner's review of the claims, applicant notes that new claim 11 comprises features of

cancelled claims 1, 3 and 7 and is based on FIG. 1 and the corresponding description that shows a plate heat exchanger for the exchange of heat between a first air stream (incoming outside air 11, outgoing air 12) and a second air stream (incoming air 13, outgoing air 14), a meander-shaped electrode device 6 which is arranged above the heat exchanger in the region of the incoming outside air 11 and a water distribution system 7 with nozzles 9 for spraying water into the exchange spaces of the first air stream.

New claim 12, which depends on new claim 11, comprises additional features of cancelled claim 1.

*Carr* discloses a heat exchanger with first and second exchange spaces for the exchange of heat between a first air stream of outside air and a second air stream of air originating from ventilated rooms. The second exchange spaces through which the second air stream with the air originating from the ventilated rooms flows are cooled with water.

*Carr* does not disclose "an ionization device for ionizing particles entrained in said first air stream so that the particles deposit at said conductive plates of the first exchange spaces; a water distribution system with nozzles for periodically discharging water into said first exchange spaces for cleaning the plates of the heat exchanger from deposited particles, bacteria, algae and other deposits; and a water collection device provided in a lower region of the heat

exchanger for discharging collected water" as recited in new claim 11. With *Carr*, water is supplied to the second exchange spaces for another purpose, namely cooling the air originating from the ventilated rooms, and no water is supplied to the first exchange spaces for cleaning conductive plates limiting the first exchange spaces. Furthermore, the water reservoir 35 of *Carr* collects the water, but does not allow the water to discharge like the water collection device of claim 11.

*Tarves* discloses a method and an apparatus for removing oil from effluent gas. The effluent gas normally exits from a dryer or oven at a temperature of approximately 200° F to 400° F and enters a conduit provided with means to render the effluent gas substantially oil free and substantially invisible. The entrance end of the conduit includes a series of baffles for evenly dispersing the effluent gas in the conduit. Thereafter, the gas contacts a heat exchanger so that the gas is cooled to approximately 90° F to 125° F. The effluent gas is cooled so that the contaminants therein will be readily condensible.

The gas is then directed through a plurality of vertically aligned venturi cones. As the gas passes through the cones, it is scrubbed by jets of water located immediately adjacent the venturi cones. The speed of the gas as it passes through the venturi cones is greatly increased and substantial turbulence is created. The turbulence aids in the scrubbing action to insure intimate contact of the oil with the water to

insure removal of a substantial quantity of the oil from the effluent gas.

The gas is thereafter directed through a screen into a packed ceramic saddle bed. The gas is scrubbed as it passes through the ceramic saddle bed. A plurality of spray nozzles are adapted to spray water through the ceramic bed to aid in the removal of oil remaining in the effluent gas. The ceramic bed causes the gas to travel a tortuous path to insure that substantially all the gas comes into contact with the scrubbing water.

The gas exits from the ceramic bed through a screen and enters a demister. The demister removes entrained droplets of liquid from the gas. The liquid removed in the demister is primarily water.

The gas is then introduced into an electrostatic precipitator of conventional design. A suitable electrostatic precipitator is sold by United Air Specialists, Inc. of Cincinnati, Ohio under the trademark "SMOG-HOG." Substantially all remaining entrained droplets are removed from the gas in the electrostatic precipitator. As the gas exits from the electrostatic precipitator, the gas is substantially oil free and invisible. The gas is thereafter returned to atmosphere.

The heat exchanger utilizes a supply of fresh water which is at approximately 50° F. The water exiting from the heat exchanger is at approximately 90° F to 125° F.

*Tarves* does not disclose a heat exchanger for the exchange of heat between a first air stream and a second air stream as recited in new claim 11. Rather, *Tarves* discloses a heat exchanger for the exchange of heat between a hot gas and a cooling liquid, *i.e.*, water. *Tarves* further fails to disclose a heat exchanger comprising an ionization device for ionizing the first air stream and a water distribution system for cleaning the ionization device. It must be noted that the heat exchanger and the electrostatic precipitator are placed at different positions in the conduit and the cooling liquid used in the heat exchanger never comes into contact with the electrostatic precipitator.

*Johansson* discloses a wet electrostatic precipitator intended for cleaning moisture-and-dust laden gas. The wet electrostatic precipitator includes a condensing cooling arrangement which is integrated with the precipitator unit of the electrostatic precipitator. A plurality of emission electrodes are located within the collector electrodes and the collector electrodes extend through the cooling arrangement. Means in the form of distribution pipes are disposed in the upper and lower end-parts of the precipitator unit, in a manner such as to achieve uniform distribution of cooling medium on the outer surfaces of the collector electrodes, the gas flowing forwardly within the collector electrodes. In other words, *Johansson* discloses an electrostatic precipitator consisting of

collector pipes having an inner wall which forms a collector electrode and of emission electrodes located within the collector pipes wherein the outside of the collector pipes is cooled by a cooling medium. From this it follows that *Johansson* does not disclose a heat exchanger for the exchange of heat between a first air stream and a second air stream as recited in new claim 11. *Johansson* further fails to disclose a water distribution system for cleaning the electrostatic precipitator, i.e. the inner walls of the collector electrodes.

*Zey et al.* disclose a sulfur dioxide collection system comprising ozone-producing electrodes upstream from a baghouse, electrostatic precipitator, or scrubber, etc., whereby ozone is produced and simultaneously reacted with sulfur dioxide in the gas stream, thereby forming sulfur trioxide which is converted to sulfuric acid mist prior to or after entry into the conventional collector. The collection system removes the acid mist, (together with particulates, if any) from the flowing gas.

*Zey* does not disclose a plate heat exchanger for the exchange of heat between a first air stream and a second air stream as in the claimed invention. *Zey* (col. 3, lines 3-61) discloses that

"water from nozzles 32 acts as a coolant for the gas stream to promote condensation of condensible gases as they enter packing 30; the water also acts as nuclei for agglomeration and gas-liquid mass transfer. Packing 30 preferably comprises horizontal layers of cellular material (for example 100 layers) supported on a horizontal wire grid 34 suitably attached to the



duct side walls. As shown in FIG. 2, the cellular packing may be of honeycomb character, comprising sinuous strips of sheet material 36 having spaced portions 38 connected together, as by welding, adhesives, etc. The packing is preferably formed of very thin gauge sheets 36 so that the sharp edges of the sheets act as shearing surfaces on the water droplets coming from water spray nozzles 32."

Thus, the packing 30 is not a heat exchanger as in the claimed invention.

Furthermore, none of cited references discloses an electrostatic precipitator that may be cleaned with water. An electrostatic precipitator is operated with a high voltage which restrains the person skilled in the art from bringing water into the region of the precipitator. Thus, for at least the above-identified reasons, new claim 11 is not anticipated or rendered obvious and the rejection of the claims under 35 U.S.C. § 102 and 103 should be withdrawn and new claim 11 allowed. Additionally, new claims 12-26 ultimately depend from claim 11 and include all of the limitations thereof. Accordingly, as claim 11 is deemed allowable, claims 12-26 should also be allowed and this action is respectfully requested.

As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance are earnestly solicited.

If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that he/she telephone applicant's

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attorney at (908) 654-5000 in order to overcome any additional objections which he might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

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Respectfully submitted,

By



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### IN THE ABSTRACT

A plate heat exchanger for exchanging heat between a first air stream and a second air stream includes a plurality of plates limiting first and second exchange chambers which are serially arranged in a transversal direction with respect to the plates. A first air stream of outside air passes through the first exchange chambers, a second air stream originating from ventilated rooms passes through the second exchange chambers. The heat exchanger further includes an ionization device for ionizing particles entrained in the first air stream so that the particles deposit at conductive plates of the first exchange spaces, a water distribution system for periodically discharging water into the first exchange spaces for cleaning the plates of the heat exchanger from deposited particles, and a water collection device for discharging collected water.